I CLAIM:

Sub A1

1. A method of detecting fractures in a fractured zone in an Earth formation, a plurality of acoustic waves propagating through the fractured zone and reflecting off a horizon in the formation and, responsive thereto, a plurality of seismic traces representative of said acoustic waves propagating through said fractured zone being received and recorded, a first portion of said seismic traces corresponding to a first window located above said fractured zone in said formation, and a second portion of said seismic traces corresponding to a second window located below said fractured zone in said formation, said method comprising the steps of:

generating a first frequency spectrum associated with said first portion of said seismic traces corresponding to said first window;

generating a second frequency spectrum associated with said second portion of said seismic traces corresponding to said second window;

superimposing said first frequency spectrum onto said second frequency spectrum thereby generating a superimposed frequency spectrum and defining from the superimposed frequency spectrum a low frequency (low) and a high frequency (high);

when said low frequency and said high frequency is defined, further defining from the superimposed frequency spectrum a plurality of amplitude values, said plurality of amplitude values including: Fa(high), Fa(low), Fb(high), and Fb(low);

from said plurality of amplitude values, defining a t* attribute; and

plotting the t* attribute value on a map and assigning a unique color to said t* attribute value.

2. The method of claim 1, wherein the step of defining a t* attribute value from said plurality of amplitude values comprises the step of:

defining a value 'F high' from a first formula, as follows:

F high = Fa(high)/Fb(high).

3. The method of claim 2, wherein the step of defining a t* attribute value from said plurality of amplitude values further comprises the step of:

defining a value 'F low' from a second formula, as follows:

F low = Fa(low)/Fb(low).

4. The method of claim 3, wherein the step of defining a t* attribute value from said plurality of amplitude values further comprises the step of:

defining said t* attribute value from a third formula, as follows:

$$t^* = [\ln (F\ high) - \ln (F\ low)]/(High - Low).$$

5. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for detecting fractures in a fractured zone in an Earth formation, a plurality of acoustic waves propagating through the fractured zone and reflecting off a horizon in the formation and, responsive thereto, a plurality of seismic traces representative of said acoustic waves propagating through said fractured zone being received and recorded, a first portion of said seismic traces corresponding to a first window located above said fractured zone in said formation, and a second portion of said seismic traces corresponding to a second window located below said fractured zone in said formation, said method steps comprising:

generating a first frequency spectrum associated with said first portion of said seismic traces corresponding to said first window;

generating a second frequency spectrum associated with said second portion of said seismic traces corresponding to said second window;

superimposing said first frequency spectrum onto said second frequency spectrum thereby generating a superimposed frequency spectrum and defining from the superimposed frequency spectrum a low frequency (low) and a high frequency (high);

when said low frequency and said high frequency is defined, further defining from the superimposed frequency spectrum a plurality of amplitude values, said plurality of amplitude values including: Fa(high), Fa(low), Fb(high), and Fb(low);

from said plurality of amplitude values, defining a t* attribute; and

plotting the t* attribute value on a map and assigning a unique color to said t* attribute value.

6. The program storage device of claim 5, wherein the step of defining a t* attribute value from said plurality of amplitude values comprises the step of:

defining a value 'F high' from a first formula, as follows:

F high = Fa(high)/Fb(high).

7. The program storage device of claim 6, wherein the step of defining a t* attribute value from said plurality of amplitude values further comprises the step of:

defining a value 'F low' from a second formula, as follows:

$$F\ low = Fa(low)/Fb(low).$$

8. The program storage device of claim 7, wherein the step of defining a t* attribute value from said plurality of amplitude values further comprises the step of:

defining said t* attribute value from a third formula, as follows:

$$t^* = [\ln (F\ high) - \ln (F\ low)]/(High - Low).$$

Sub G3

9. An apparatus adapted for detecting fractures in a fractured zone in an Earth formation, a plurality of acoustic waves propagating through the fractured zone and reflecting off a horizon in the formation and, responsive thereto, a plurality of seismic traces representative of said acoustic waves propagating through said fractured zone being received and recorded, a first portion of said seismic traces corresponding to a first window located above said fractured zone in said formation, and a second portion of said seismic traces corresponding to a second window located below said fractured zone in said formation, said apparatus comprising:

first means for generating a first frequency spectrum associated with said first portion of said seismic traces corresponding to said first window;

second means for generating a second frequency spectrum associated with said second portion of said seismic traces corresponding to said second window;

third means for superimposing said first frequency spectrum onto said second frequency spectrum thereby generating a superimposed frequency spectrum and defining from the superimposed frequency spectrum a low frequency (low) and a high frequency (high);

fourth means for further defining, from the superimposed frequency spectrum, a plurality of amplitude values when said low frequency and said high frequency is defined, said plurality of amplitude values including: Fa(high), Fa(low), Fb(high), and Fb(low);

fifth means for defining a t* attribute from said plurality of amplitude values; and

sixth means for plotting the t* attribute value on a map and assigning a unique color to said t* attribute value.

10. The apparatus of claim 9, wherein said fifth means for defining a t* attribute value from said plurality of amplitude values comprises:

means for defining a value 'F high' from a first formula, as follows:

F high = Fa(high)/Fb(high).

11. The apparatus of claim 10, wherein said fifth means for defining a t* attribute value from said plurality of amplitude values further comprises:

means for defining a value 'F low' from a second formula, as follows:

F low = Fa(low)/Fb(low).

12. The apparatus of claim 11, wherein said fifth means for defining a t* attribute value from said plurality of amplitude values further comprises:

means for defining said t* attribute value from a third formula, as follows:

t* = [ln (F high) - ln (F low)]/(High - Low).

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